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Thomas Scherer

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WOOD, HERRON & EVANS, LLP  
2700 CAREW TOWER  
441 VINE STREET  
CINCINNATI, OH 45202

EXAMINER

DUKE, EMMANUEL E

ART UNIT

PAPER NUMBER

3744

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,779	<b>Applicant(s)</b> SCHERER ET AL.	
	<b>Examiner</b> EMMANUEL DUKE	<b>Art Unit</b> 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06/27/2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/27/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Objections*

1. Claims 1-23 are objected to because of the following informalities:
  - In claim 1, line 3; the phrase “brings this back” should be changed to --return the cold carrier medium-- for clarity.
  - In claim 3, line 3; the phrase “chosen in such a way,” should be changed to --configured so-- for clarity.
  - In claim 9, line 2; the phrase “carier pumps” should be changed to --carrier pumps -- for correct spelling.
  - In claim 13, line 3; the phrase “the current cold requirement” should be changed to --a cold requirement-- for proper antecedent basis and clarity.
  - In claim 14, lines 5-6; the phrase “the pressure” should be changed to --a pressure-- for proper antecedent basis.
  - In claim 20, line 4; the phrase “the quantity” should be changed to --a quantity-- for proper antecedent basis.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claims 1-3, 5-10, 12-17, 20, 22-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Simadiris et al. (U.S. PG Pub No.: 2003/0042361), hereinafter referred to as Simadiris et al. '361.***

Regarding claim 1, Simadiris et al. '361 discloses cooling system (Fig. 1: [0023]) for the cooling of heat producing devices (20, Fig. 1: [0032]) in an aircraft [0023], with a central cold producing device (30, Fig. 1: [0036]), at least one cold consumer (18, Fig. 1: [0043]) and a cold conveyance system (32, Fig. 2 and 8: [0037]) which connects the cold producing device and the cold consumers, whereby the cold conveyance system has at least one cooling circuit (48, Fig. 1 and 2: [0045]) which supplies cooled cold carrier medium (27, Fig. 1: [0042]) from the cold producing device to the at least one cold consumer and return the cold carrier medium (50, Fig. 2: [0045]) to the cold producing device, and whereby the at least one cold consumer is supplied with cold produced in the cold producing device by means of the cold carrier medium circulating in the cooling circuit.

Regarding claim 2, Simadiris et al. '361 discloses cooling system in accordance with claim 1, characterised in that the cold producing device has at least two cooling machines (Fig. 8: wherein three cooling machines (30) are shown) which work independently of one another and are coupled in parallel to the cold conveyance system.

Art Unit: 3744

Regarding claim 3, Simadiris et al. '361 discloses cooling system in accordance with claim 1, characterised in that the number of cooling machines of the cold producing device is configured (Fig. 8: [0031], [0044]) so that the cold requirement for the aircraft during ground operation is covered.

Regarding claim 5, Simadiris et al. '361 discloses cooling system in accordance with claim 1, characterised in that a number of cooling circuits (Fig. 7: shows a number of cooling circuits) which are essentially independent of one another, are provided.

Regarding claim 6, Simadiris et al. '361 discloses cooling system in accordance with claim 5, characterised in that a cooling circuit (48, Fig. 1 and 2: [0045-0046]) capable of being provided on each side of the aircraft in relation to a longitudinal axis of the aircraft and/or one cooling circuit in a front half and one in the rear half of the aircraft.

Regarding claim 7, Simadiris et al. '361 discloses cooling system in accordance with claim 6, characterised in that cold consumers (Fig. 3-7: [0046], wherein 18 is that cold consumers) capable of being positioned in the centre of the aircraft are supplied with cold carrier medium from at least two cooling circuits (as shown in Fig. 3).

Regarding claim 8, Simadiris et al. '361 discloses cooling system in accordance with claim 5, characterised in that each cooling circuit has at least one cold carrier pump (44, Fig. 8: [0041]) for the circulation of cold carrier medium.

Regarding claim 9, Simadiris et al. '361 discloses cooling system in accordance with claim 8, characterised in that at least two cold carrier pumps (44, Fig. 8: [0049]), which are assigned to one and the same cooling circuit, are supplied with electric energy (Fig. 8: depicts PC Board 66 supplies at least two cold carrier pumps with electric energy) independently of one another.

Art Unit: 3744

Regarding claim 10, Simadiris et al. '361 discloses cooling system in accordance with claim 5, characterised in that at least one storage unit (46, Fig. 8: [0042]) for the intermediary storage of cold carrier medium is assigned to each cooling circuit.

Regarding claim 12, Simadiris et al. '361 discloses cooling system in accordance with claim 1, characterised in that at least one cold consumer has a secondary cold conveyance system (26, Fig. 9: [0032]) in which cold is transferred from the cold carrier medium by means of a secondary cold carrier (Fig. 1: wherein air in the cold consumer 18 is a secondary cold carrier), preferably air.

Regarding claim 13, Simadiris et al. '361 discloses cooling system in accordance with claim 1, characterised in that a central control unit (52, Fig. 8: [0009], [0047]) is provided which, dependent upon at least one of the specified parameters (Fig. 8: [0047], [0048], wherein 54, 56, 60, 62, 64 are specified parameters) for a cold requirement (64, Fig. 8: [0048] [0050], wherein a specified temperature is a current cold requirement), the cold output is controlled in each of the cooling circuits [0047].

Regarding claim 14, Simadiris et al. '361 discloses cooling system in accordance with claim 13, characterised in that the parameters which specify the current cold requirement reflect the temperature of the cold carrier medium at least one point (54, Fig. 8: [0047]) in the cooling circuit, preferably at least the output temperature 54 of the cold carrier medium from the cold carrier pump, and/or information about the cold requirement of at least one cold consumer and/or a pressure (64, Fig. 8: [0048]) of the cold carrier medium in the cooling circuit in question.

Regarding claim 15, Simadiris et al. '361 discloses cooling system in accordance with claim 2, characterised in that the cold output is controlled so as to adapt to the current cold requirement in the aircraft by means (Fig. 10: [0009], [0027-0028] and [0047-0048]) of turning individual cooling machines of the cold producing device on and off.

Art Unit: 3744

Regarding claim 16, Simadiris et al. '361 discloses cooling system in accordance with claim 2, characterised in that a check valve [0009] and a bypass line [0040] which bypasses the cooling machine is assigned to each cooling machine.

Regarding claim 17, Simadiris et al. '361 discloses cooling system in accordance with claim 13, characterised in that the cold output of at least one cooling machine is controllable [0009], wherein , preferably continuously [0025], by means of the control unit.

Regarding claim 20, Simadiris et al. '361 cooling system in accordance with claim 13, characterised in that the control unit for the control of the cold output of the cooling system changes a quantity ([0040] and [0043], wherein a change in flow rate 4.6gal/min to 10 gal/min constitute the cooling system changes a quantity) of cold carrier medium supplied in the cooling circuit in question.

Regarding claim 22, Simadiris et al. '361 cooling system in accordance with claim 5, characterised in that each cooling circuit is supplied with electric energy (Fig. 8: depicts PC Board 66 supplying each cooling circuit with electric energy), independently of at least one other cooling circuit.

Regarding claim 23, Simadiris et al. '361 discloses an aircraft with a cooling system [0002] in accordance with claim 1.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a)

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Simadiris et al. '361, in view of Fischer et al. (***U.S. Patent No. 5,513,500***), hereinafter referred to as Fischer et al. '500.

Regarding claim 4, Simadiris et al. '361 cooling system in accordance with claim 1; however, he does not disclose the limitation characterised in that the at least one cooling machine



Art Unit: 3744

uses air outside of the pressure cabin of the aircraft as a heat sink in order to expel heat, and the warm extracted air is expelled outside of the pressure cabin.

Fischer et al. '500 teaches: that at least one cooling machine (4, Fig. 1-3: Col 4, lines 4-8) uses air outside (14, Fig. 1-3: Col 5, lines 25-42) of the pressure cabin of the aircraft as a heat sink in order to expel heat (14', Fig. 1-3: Col 5, lines 25-42), and the warm extracted air is expelled outside of the pressure cabin (2B, Fig. 1: Col 4, lines 4-8). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Simadiris et al. '361 one cooling machine to include the use of an air outside of the pressure cabin of the aircraft as a heat sink as taught by Fischer et al. '500 in order to remove heat from the coolant in the evaporator (Fischer et al. '500 - Col 5, line 37).

***Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Patel Simadiris et al. '361, in view of Nikly (U.S. Patent No. 5,553,576), hereinafter referred to as Nikly '576.*

Regarding claim 11, Simadiris et al. '361 discloses cooling system in accordance with claim 5; however, he does not disclose the limitation characterised in that at least two cooling circuits are thermally coupled to a cold consumer by means of the cold producing device and/or by means of a heat exchanger.

Nikly '576 teaches: that the two cooling circuits (21, 41, Fig. 1: Col 2, lines 27-28) are thermally coupled to a cold consumer by means of the cold producing device and/or by means of a heat exchanger (30, Fig. 1: Col 2, lines 27-28). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Simadiris et al. '361 cooling system to include the use of at least two cooling circuits are thermally coupled to a cold consumer by means of the cold producing device and/or by means of a heat exchanger as taught by Nikly '576 in order to provides simultaneous cooling to the cold consumers under flight condition and alternating cooling to the cold consumer under on-ground waiting condition. Furthermore, the general concept of duplicating parts and deployment of same as to provide for a

Art Unit: 3744

redundant system falls within the realm of common knowledge as an obvious mechanical expedient. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Simadiris et al. '361 cooling system to include the use of a second cooling circuit that is thermally coupled to the cold consumer by means of the cold producing device and/or by means of the heat exchanger as a backup circuit.

***Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over Simadiris et al. '361, in view of Pearson et al. (U.S. Patent No. 4,744,408), hereinafter referred to as Pearson et al. '408.*

Regarding claim 18, Simadiris et al. '361 discloses cooling system in accordance with claim 13, characterised in that the control unit controls the cooling machine in accordance with the output temperature measured (Fig. 8: wherein 54 measured output temperature). However, he does not explicitly disclose the limitation characterised in that the control unit records, the output temperature of the cold carrier medium leaving the cooling machine and controls the cooling machine in accordance with the output temperature measured and recorded.

Pearson et al. '408 teaches: that the control unit records (25, Fig. 1: Col 4, lines 45-47), the output temperature of the cold carrier medium leaving the cooling machine and controls the cooling machine in accordance with the output temperature measured (42, Fig. 1: Col 6, line 68 thru Col 7, lines 1-10) and recorded. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Simadiris et al. '361 control unit to include recording of the output temperature as taught by Pearson et al. '408 in order to control and use the least costly resource to maintain the specified temperature (Pearson et al. '408 - Col 3, lines 20-27).

Art Unit: 3744

**Claims 19 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Simadiris et al. '361*, in view of *Pearson et al. '408*, further in view of *Temmyo et al. (U.S. PG Pub No.: 2002/0134095)*, hereinafter referred to as *Temmyo et al. '095*.

Regarding claims 19, 21, the combination of *Simadiris et al. '361* and *Pearson et al. '408* disclose and teach the cooling system in accordance with claims 18 and 20; *Simadiris et al. '361* discloses that the cold output of at least one cooling machine can be changed by means of a bypass valve [0040] and/or a compressor (34, Fig. 1 and 2: [0009] and [0037]) used in the cooling machine. However, he does not disclose the limitation of varying the revolutions per minute of the compressor.

*Temmyo et al. '095* teaches: that the out output cooling machine (S24, Fig. 9: [0059]) can be changed by varying the revolutions per minute of the compressor (S22, S23, Fig. 9: [0059]). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the *Simadiris et al. '361* compressor to include the use of a variable speed compressor as taught by *Temmyo et al. '095* in order to reduced power consumption thereby cost of operation.

### ***Conclusion***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMMANUEL DUKE whose telephone number is (571)270-5290. The examiner can normally be reached on Monday - Friday; 8:00am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler or Frantz Jules can be reached on 571-272-4834 or 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3744

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EMMANUEL DUKE, Examiner  
Art Unit 3744  
08/11/2010

/Frantz F. Jules/

Supervisory Patent Examiner, Art Unit 3744